

Serial No. 09/763,913
Page 2 of 11

RECEIVED
CENTRAL FAX CENTER
AUG 30 2006

IN THE CLAIMS

1. - 6. (canceled)

7. (currently amended) A mobile station ~~as claimed in claim 4~~, for use in a CDMA communications network, comprising:

a wanted signal processing portion which processes an input signal, representing a CDMA transmission signal received at the mobile station from a base station of the network, to derive therefrom a wanted signal embodying a preselected spreading code;

a code information receiving portion which receives from the base station code information identifying a further spreading code assigned by the network to an interfering signal of another network user; and

an interfering signal processing portion which employs the further spreading code identified by the received code information to reduce the interference effect of that interfering signal on the derived wanted signal, wherein

said input signal of the wanted signal processing portion is pre-processed by the interfering signal processing portion to reduce or cancel components in the input signal associated with each said interfering signal,

said interfering signal processing portion is operable to derive, for each said interfering signal, a corresponding interference cancellation signal representative of a component in said input signal associated with that interfering signal, and

84159018_1

Serial No. 09/763,913

Page 3 of 11

_____ said interfering signal processing portion has, for each said interfering signal, a corresponding processing unit for deriving said interference cancellation signal corresponding to that interfering signal, which processing unit comprises:

a code generator which generates the identified spreading code assigned to said interfering signal;

a despreader connected for receiving a first signal representing the received CDMA transmission signal and also connected to said code generator for receiving the generated spreading code, and operable to despread the first signal to produce a second signal representing said interfering signal; and

a resreader connected to said despreader for receiving therefrom said second signal and also connected to said code generator for receiving the generated spreading code, and operable to respread said second signal to produce said corresponding interference cancellation signal.

8. (currently amended) A mobile station ~~as claimed in claim 4~~, for use in a CDMA communications network, comprising:

a wanted signal processing portion which processes an input signal, representing a CDMA transmission signal received at the mobile station from a base station of the network, to derive therefrom a wanted signal embodying a preselected spreading code;

a code information receiving portion which receives from the base station code information identifying a further spreading code assigned by the network to an interfering signal of another network user; and

R4159018_1

Serial No. 09/763,913

Page 4 of 11

an interfering signal processing portion which employs the further spreading code identified by the received code information to reduce the interference effect of that interfering signal on the derived wanted signal, wherein

said input signal of the wanted signal processing portion is pre-processed by the interfering signal processing portion to reduce or cancel components in the input signal associated with each said interfering signal,

said interfering signal processing portion is operable to derive, for each said interfering signal, a corresponding interference cancellation signal representative of a component in said input signal associated with that interfering signal, and

said interfering signal processing portion further comprises:

a signal delay element connected for receiving a basic signal representing said received CDMA transmission signal and operable to delay the signal by a preselected delay time to produce a delayed version thereof, said input signal of each said processing unit being provided directly by, or being derived from, said basic signal; and

a subtractor connected for receiving said delayed version of said basic signal and each said interference cancellation signal, and operable to produce said input signal of said wanted signal processing portion in dependence upon the difference between said delayed version and each interference cancellation signal.

9. – 12. (canceled)

13. (currently amended) A mobile station ~~as claimed in claim 1~~, for use in a CDMA communications network, comprising:

84159018_1

Serial No. 09/763,913

Page 5 of 11

a wanted signal processing portion which processes an input signal, representing a CDMA transmission signal received at the mobile station from a base station of the network, to derive therefrom a wanted signal embodying a preselected spreading code;

a code information receiving portion which receives from the base station code information identifying a further spreading code assigned by the network to an interfering signal of another network user; and

an interfering signal processing portion which employs the further spreading code identified by the received code information to reduce the interference effect of that interfering signal on the derived wanted signal, wherein

said base station is operable to form respective beams for directing its CDMA transmission signals towards their respective users and is also operable to transmit to said mobile station interference judgement information providing, for each of a plurality of users operating in its area, information relevant to assessing an interference effect on the wanted signal of said mobile station of an interfering signal of the user concerned;

said mobile station comprising:

an interfering signal assessment portion which assesses said interference effect of the interfering signal of each user of said plurality based on the received interference judgement information; and

an interfering signal selection portion which selects one or more of the interfering signals from amongst the respective interfering signals of the plurality of users based on the results of the assessment.

84159018_1

Serial No. 09/763,913

Page 6 of 11

14. (previously presented) A mobile station as claimed in claim 13, wherein said interference judgement information for such a user of said plurality includes position information of that user.

15. (previously presented) A mobile station as claimed in claim 13, wherein said interference judgement information for a user of said plurality of users includes angular position information of the user relative to the base station.

16. (previously presented) A mobile station as claimed in claim 13, wherein said interference judgement information for a user of said plurality of users includes downlink transmission power level information of the user.

17. (previously presented) A mobile station as claimed in claim 13, wherein said interfering signal assessment portion takes account of the position of each of said plurality of users relative to the position of the mobile station in assessing said interference effect.

18. (previously presented) A mobile station as claimed in claim 13, wherein said interfering signal assessment portion include storage which stores the received interference judgement information for each of said plurality of users.

19. (previously presented) A mobile station as claimed in claim 13, wherein the plurality of users are users whose downlink transmission rates exceed a predetermined threshold value.

84159018_1

Serial No. 09/763,913
Page 7 of 11

20. – 22. (canceled)

23. (currently amended) A base station ~~as claimed in claim 20, further comprising:~~ for use in a CDMA communications network, comprising:

an interfering signal designating portion which designates at least one of a plurality of downlink signals transmitted by the base station as being an interfering signal having an interference effect on a wanted signal of a subject mobile station of the network;

a code information transmission portion which includes, in a predetermined control signal transmitted by the base station to said subject mobile station, code information, identifying a spreading code assigned by the network to the designated interfering signal, for use by the subject mobile station to reduce said interference effect of said interfering signal on said wanted signal; and

an interfering signal assessment portion which assesses, for each of a plurality of users operating in the area of the base station, said interference effect on said wanted signal of said subject mobile station of the downlink signal of the user concerned; said interfering signal designating portion being operable to determine which downlink signals of the plurality of users are to be designated as interfering signals based on the results of the assessment.

24. (previously presented) A base station as claimed in claim 23, wherein said interfering signal assessment portion is operable to assess said interference effect in dependence upon the bit rate of the downlink signal.

25. (canceled)

84159018_1

Serial No. 09/763,913
Page 8 of 11

26. (previously presented) A base station as claimed in claim 23, wherein said interfering signal assessment portion is operable to assess said interfering effect in dependence upon a position of the user relative to said subject mobile station.

27. (previously presented) A base station as claimed in claim 23, wherein said interfering signal assessment portion is operable to assess said interference effect in dependence upon one or more of the following criteria:

- an angular position of the user relative to said base station;
- an angular position of said subject mobile station relative to the base station;
- a distance of the user from the base station;
- a distance of the subject mobile station from the base station;
- a downlink transmission power level of the user; and
- a downlink-signal bit-rate of the user.

28. (canceled)

29. (currently amended) A base station as claimed in claim 28, for use in a CDMA communications network, comprising:
an interfering signal designating portion which designates at least one of a plurality of downlink signals transmitted by the base station as being an interfering signal having an interference effect on a wanted signal of a subject mobile station of the network;

84159018_1

Serial No. 09/763,913

Page 9 of 11

a code information transmission portion which includes, in a predetermined control signal transmitted by the base station to said subject mobile station, code information, identifying a spreading code assigned by the network to the designated interfering signal, for use by the subject mobile station to reduce said interference effect of said interfering signal on said wanted signal;

a beamformer which forms respective beams for directing its CDMA transmission signals towards their respective users; and

an interference judgement information transmission portion which includes, in a predetermined control signal transmitted by the base station to said subject mobile station, interference judgement information providing, for each of a plurality of users operating in the area of the base station, information relevant to assessing an interference effect on said wanted signal of the downlink signal of the user concerned, wherein

said interference judgement information for a user of said plurality of users includes position information of that user.

30. - 37. (canceled)

84159018_1